

U.S. Patent Application No. 10/516,558
Amendment dated January 11, 2008
Reply to Office Action dated October 11, 2007

AMENDMENTS TO THE SPECIFICATION:

Please replace Table 1, appearing on page 15 of the specification, with the following amended Table 1:

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Table 1 Structure of RB1CC1 gene

No.	Exon		Intron		
	nucleic acid strand length	(bp)	No.	nucleic acid strand length	(kb)
	human	mouse		human	mouse
1	358	296	1	9.1	11.2
2	115	110	2	1.3	1.8
3	122	115	3	1.4	3.5
4	127	127	4	0.2	0.1
5	171	171	5	7.0	3.8
6	203	203	6	2.1	1.3
7	430	427	7	5.7	3.8
8	171	171	8	6.3	0.5
9	185	185	9	0.3	0.2
10	187	187	10	0.1	0.1
11	82	82	11	0.3	0.1
12	62	62	12	1.6	1.6
13	104	104	13	0.8	0.3
14	127	127	14	0.1	0.1
15	1901	1892	15	10.1	10.0
16	166	166	16	2.9	1.6
17	109	109	17	0.1	0.1
18	241	241	18	6.3	1.1
19	55	49	19	1.0	1.0
20	48	48	20	4.4	3.0
21	59	59	21	2.3	2.1
22	137	137	22	3.5	2.0
23	71	71	23	0.8	1.6
24	1401	1379			

Exon sequences are shown in upper case letters,
and intron sequences are shown in lower case.

Human Sequence						
receptor sequence in splicing			donor sequence in splicing			
1				GCGTGCOCGG	gtaagtgtcg	SEQ ID NO: 133
2	tcttttcoag	TTTCTGAGT	SEQ ID NO: 134	GTCGCTGACG	gtaagtcaca	SEQ ID NO: 135
3	tttcttctag	TAACGTATC	SEQ ID NO: 136	CAGTGCACAC	gtaagttgta	SEQ ID NO: 137
4	ttttttgaag	TGTGCGAGC	SEQ ID NO: 138	TGCTGGGACG	gtaggtattc	SEQ ID NO: 139
5	aaaaatatag	GATACAAATC	SEQ ID NO: 140	GCTTGCATTG	gtaagatata	SEQ ID NO: 141
6	ttcaatatag	GAAATGTATG	SEQ ID NO: 142	AACTTACTCA	gtatgtttgc	SEQ ID NO: 143
7	gtatttttaag	TTTAGGAACT	SEQ ID NO: 144	TATGAGCAGG	gtaagtaacg	SEQ ID NO: 145
8	tgtcatttag	CTTGATCCAA	SEQ ID NO: 146	GCTTGCCTCAG	gtacctattt	SEQ ID NO: 147
9	tttctcaaag	GGATTTTITAG	SEQ ID NO: 148	TCAGACTGAA	gtaagtgtatt	SEQ ID NO: 149
10	tattctctag	GTGGTGTTGC	SEQ ID NO: 150	CTACAGGGAG	gtatgcaagt	SEQ ID NO: 151
11	octcttctag	TGGGCTGGTG	SEQ ID NO: 152	AAATTATTTA	gtaagtgttc	SEQ ID NO: 153
12	ctttatacag	GGAAGTCTTT	SEQ ID NO: 154	TTCTTTTGT	gtatgtattt	SEQ ID NO: 155
13	tttggtacag	ACTCAAAAGC	SEQ ID NO: 156	CATTCTCTCAG	gtaaatgtca	SEQ ID NO: 157
14	tctgtttcag	GGTTCCTTTA	SEQ ID NO: 158	TGAACAAAAG	gcaaatcoaa	SEQ ID NO: 159
15	tgttttcoag	GCACTCTGTGA	SEQ ID NO: 160	TAGCAAAAAG	gtaagaatta	SEQ ID NO: 161
16	aatttgtaag	TOCTGCCATT	SEQ ID NO: 162	GGAACAACAG	gtctgtatct	SEQ ID NO: 163
17	cttggttccag	AOCATTTTITA	SEQ ID NO: 164	CGGATAAAG	gtttgtactg	SEQ ID NO: 165
18	tgtcttccag	ATTGATAGA	SEQ ID NO: 166	TGCTCTGTACA	gtaagtatgy	SEQ ID NO: 167
19	tcacttttag	AGAAATATT	SEQ ID NO: 168	GTTAGAACGA	gtaagtaaat	SEQ ID NO: 169
20	ccactgcag	ACATTGCAAT	SEQ ID NO: 170	TCAAGACTTG	gtaagatttt	SEQ ID NO: 171
21	tttttttttag	ATGCTCTAGA	SEQ ID NO: 172	CTATTAGAGA	gtaagtattt	SEQ ID NO: 173
22	ctttattcag	TTTTCAGGTG	SEQ ID NO: 174	GGTGAGGGTG	gtaagtgtca	SEQ ID NO: 175
23	atttcattag	CTTCAGGTGC	SEQ ID NO: 176	AGCCAAAAG	gtaaaaoga	SEQ ID NO: 177
24	tooctcttag	GCACAAAACA	SEQ ID NO: 178			

Please replace the first paragraph appearing on page 31 with the following amended paragraph:

(Example 1 cDNA of human RB1CC1)

In order to identify genes involved in MDR, we found a gene that expresses differentially in U-2 OS osteosarcoma cells and MDR-variant induced cells, to thereby identify a novel human gene. The gene was cloned using the set of primers (CC1-S1 and CC1-AS1) set forth in SEQ ID Nos: 5 and 26 and the set of primers (CC1-S2 and CC1-AS2) set forth in SEQ ID Nos: 6 and 25 in the sequence listing, and the nucleic acid sequence thereof was then determined using the primers set forth in SEQ ID Nos: 7 to 24. Further, the cDNA sequences at the 5'- and 3'-ends were identified using a commercially available rapid amplification kit for cDNA end sequences (RACE kit, manufactured by Roche) and the primers set forth in SEQ ID Nos: 27 to 37. The DNA and the amino acid sequence encoded thereby were analyzed using DNAsis Version 3.2 Sequence Analyzer (manufactured by Hitachi Software Engineering Co.) and PSORT II (<http://www.yk.rim.or.jp/~aisoai/molbio-j.html>). Results showed that the cDNA had a length of 6.6 kb including an open reading frame (ORF) of 4782 nucleotides, encoding a protein comprising 1594 amino acids with a molecular weight of 180 kDa.

Please replace the paragraph beginning at page 38 and ending at page 39 with the following amended paragraph:

(Example 9 RB1 gene promoter transcriptional activity of RB1CC1 gene of the present invention)

We examined whether introduction of the RB1CC1 gene enhanced the transcriptional activity of the promoter region of RB1 gene. A gene of RB1 promoter region of approximately 2 kb was amplified with the pair of primers 5'-GAA GAT CTT TGA AAT TCC TCC TGC ACC A-3' (SEQ ID NO. 179) (Bgl.RbPro-S) and 5'-CCC AAG CTT AGC CAG CGA GCT GTG GAG-3' (SEQ ID NO. 180) (Hind.RbPro-AS), and incorporated into PicaGene Basic vector 2 (manufactured by Toyo Ink Mfg. Co., Ltd.). Then, RB1 promoter which controls expression of firefly luciferase was used to prepare pGV-RbPro vector. The prepared pGV-RbPro vector was then retranscribed with pRL-SV40 encoding the sea pansy luciferase gene, as an internal control, and incorporated into K562 cell using LIPOFECTAMINE PLUS reagent (manufactured by GIBCO-BRL). Results of analysis conducted after 48 hours using a double luciferase assay system (Toyo Ink Mfg. Co., Ltd.) showed that K562 cell introduced with RB1CC1 gene exhibited strong luciferase activity compared to K562 cell incorporated with lac Z as a control, showing that introduction of the RB1CC1 gene enhanced the transcriptional activity of RB1 gene promoter (Figure 10).